2006

Guidelines for Post-Spray Evaluation of the Michigan Cooperative Gypsy Moth Suppression Program

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Introduction

AN EVALUATION OF THE EFFECTIVENESS OF THE SPRAY PROGRAM IS IMPORTANT BECAUSE IT PROVIDES A GREAT DEAL OF MEANINGFUL INFORMATION. FIRST, THIS SITE-SPECIFIC INFORMATION HELPS ALL OF US TO UNDERSTAND IF THE TREATMENT CONDITIONS AND APPLICATION RATES ARE CONTROLLING GYPSY MOTH POPULATIONS. SECOND, THIS INFORMATION HELPS US TO UNDERSTAND WHAT A LANDOWNER IS EXPERIENCING ON A DAILY BASIS. BOTH OF THESE CAN BE USED TO SUGGEST IMPROVEMENTS TO THE PROGRAM FOR NEXT YEAR:

1. DEFOLIATION WILL BE RANKED INTO 1 OF 5 CATEGORIES AND IDENTIFIED AS A, B, C, D OR E.
2. AN AVERAGE WILL BE USED TO DETERMINE BLOCK DEFOLIATION.
3. IT IS NOT NECESSARY TO EVALUATE UNTREATED BLOCKS BUT YOU MAY BE INTERSTED IN THE COMPARISON.
4. **DEFOLIATION SURVEY RESULTS** ARE TO BE SENT TO THE TRAVERSE CITY MDA OFFICE BY **JULY 31ST**
5. THE **PERCEPTION SURVEY RESULTS** ARE TO BE SENT TO THE TRAVERSE CITY MDA OFFICE BY **AUGUST 15TH**.
6. THE MICHIGAN REPORT WILL BE SENT TO THE U.S. FOREST SERVICE AND COPIES TO COUNTIES AND MDA STAFF BY OCTOBER 15TH.

Sampling Protocol

SITE SELECTION: Each coordinator will work with the MDA Gypsy Moth Specialist who will select evaluation sites. All evaluations will be done on a spray block by spray block basis. The number of spray blocks to be evaluated depends on each county's fraction of the total number of acres treated in the Michigan Program. Each treatment block to be evaluated will have defoliation and perception work done on it. The process for this is outlined below.

The number of blocks to be surveyed should represent the county's portion of the total acres treated (see Defoliation/Perception Survey Chart). In this scenario each county will conduct the survey on at least one block. If you are surveying less than 5 blocks, all blocks must be Category 1 (Residential) blocks. At 5 or more blocks you may begin to evaluate blocks from the other Categories. Defoliation measurements will take place in the same location as the egg mass surveys completed in the fall. The number of defoliation survey sites, therefore, depends on the number of egg mass survey sites completed in the block. All residents within a surveyed block are to be sent a Perception Survey form.

The result of this is that all data will come from the same area. Defoliation and perception will be directly related and some measure of real and imagined effectiveness can be calculated. In addition, egg mass densities, application conditions and demographic information can all be brought into the final assessment of the effectiveness of the pesticide application.

One drawback, however, is the data will be significant at the state level but not necessarily at the county level. If you feel the need to do more in your county, by all means please do so. This additional data will not be collected.

Defoliation Survey

BUDDY SYSTEM: It is strongly recommended that adjacent counties team up for their evaluations, as the old adage goes, "two heads are better than one." Having someone with you will make the task more pleasant and will reduce the risk of personal bias in the evaluation.

CALIBRATION:: When you arrive at the first site of the day, you and your sampling partner should separately sample the same 3 trees. Write the estimated percentage of foliage missing, estimated diameter, and tree type on a separate piece of paper. Compare your answers with each other to assess your consistency. If they vary, sample three more trees and once again compare results. If you are still not seeing the trees consistently, sample the trees one by one and discuss your estimates. Once you feel confident that you are both seeing the same thing, you may continue with your sampling.

SAMPLING: Using the Egg Mass Density Data Sheets completed last fall (or any other record of egg mass density measurement sites), move to your first sampling site. The two samplers should sample 4 trees in the vicinity of the egg mass density measurement site. This will result in 8 trees being evaluated at each site. Because of the difficulty of determining defoliation, if at all possible, please sample trees that do not have touching crowns.

The sampling form to be used in the field and also used to provide final sample site totals is attached (please make all needed copies). Once the first site is completed the two samplers are to move to the second site for the block. This continues until all sites for the block are completed. If more than one block is going to be sampled, the team moves on to the next block, a new set of forms are prepared and the process begins again.

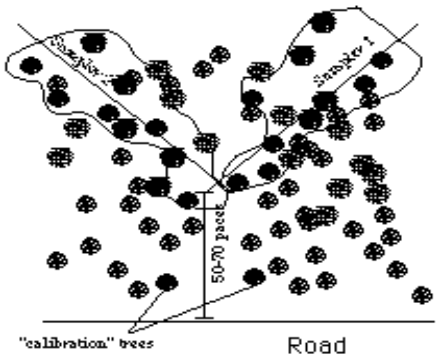
At the end of the day, the tree data for both samplers should be transcribed to the final sample data forms. At that time, also record the other information about the sample site requested from the load sheet and from the fall egg mass counts.

TREE TYPES: Your first choice should be to sample trees that are highly susceptible to gypsy moth defoliation. Oak and aspen are trees commonly found in Michigan wood lots that are highly preferred by gypsy moth. However, many residential sites have a mixture of other susceptible ornamental tree types. Use the 'Other' category for those species that do not fit in the oak or aspen categories.

DEFOLIATION: When you have picked the tree you wish to sample, record the tree type and estimated size on the data form. Then look to see if the tree has any measurable defoliation. If not mark the tree as an (A). If there appears to be defoliation then, by looking at the overall picture of the tree, rapidly 'guesstimate' whether more or less than 50% of the foliage is missing. If less, then estimate whether more or less than 25% is gone. This will quickly put you in the B category (<25%) or the C category (<50% but >25%).

If more than 50% is missing then estimate whether more or less than 75% is gone. This will quickly put you in the D category (<75% but >50%) or the E category (>75%).

Attached are plates of example leaves with levels of defoliation that fall within the 5 defoliation categories. Be careful to assess damage on a whole tree basis and not based on the situation with one cluster of leaves or a branch. Also, avoid including dead branches. Leaves that have been eaten by gypsy moth, even 100% eaten, will still have visible petioles. After the first 2 sites you should find that you will be able to make a decision within 15 seconds of looking at a tree. Try to mentally exclude any new replacement leaves from your estimates. After every site, sample two of the same trees to make sure that you and your partner are still estimating the trees in the same fashion. We have observed that if you sample several sites with low defoliation, the samplers will begin to artificially increase the damage levels.



Example of sampling site.
Bolded trees are sample trees.

After you have finished sampling your county, please send the completed forms to:

Mike Philip, Invasive Species Program Manager
Michigan Department of Agriculture
Pesticide and Plant Pest Management Division
525 W. Allegan St.
Lansing, MI 48909

You should retain copies for your own records. If there are any questions or concerns, please call (517) 335-0730.

2006 MICHIGAN GYPSY MOTH SUPPRESSION PROGRAM

POST APPLICATION SURVEY/ FIELD SAMPLING FORM

COUNTY:_____

Instructions:

1. Complete a separate form for each block surveyed.
2. Circle the tree type: P=poplar; Ok=Oak; O=Other. Other is to be used only when oak and poplar species are not present. Be sure that 'Other' species are on the list of susceptible species. Circle the estimated diameter (in inches at chest height). Write the estimated percent defoliation letter (A, B, C, D, E) on the line provided.
3. Be sure to complete all information from other recorded locations. Block number must refer to the block number indicated in the original proposed sheets submitted in January. If your block has more than 8 survey sites, please attach additional sheets.
4. If you have any questions, please call Mike Philip at 517-373-0530.

BLOCK INFORMATION (From Egg Mass Data Sheet)

Town Line:_____ Range Line:_____ Section(s):_____

Township Municipality:_____ Priority Category:_____ Block #:_____

Block Size:_____ Average Egg Mass Density:_____

Egg Mass Size (Circle one): Dime Nickel Quarter

APPLICATION INFORMATION (From Load Sheets)

Contractor:_____ BIUs Applied:_____ Date(s) Treated:_____

Product Used (Circle one): Foray 48F Foray 76B Thuricide 48LV GypChek

Wind Speed:_____ Wind Direction:_____ Temperature:_____

Relative Humidity:_____ Time of Application:_____

SITE DATA

Defoliation Ranking

(A) = No Defoliation

(B) = 1 - 25% (C) = 26 – 50%

(D) = 51 – 75% (E) = 76 – 100%

Site 1

Plot # _____ (From Egg Mass Survey Data Sheet)

Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____

GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 2

Plot # _____ (From Egg Mass Survey Data Sheet)

Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____

GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

POST APPLICATION SURVEY/ FIELD SAMPLING FORM – PAGE 2

COUNTY:_____

Site 3
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 4
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 5
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 6
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 7
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	

Site 8
Plot #:_____ (From Egg Mass Survey Data Sheet)
Egg Masses:_____ (From Egg Mass Survey Data Sheet)

GPS Latitude _____
GPS Longitude _____

	Tree Type	Diameter (in)	Defoliation Ranking
1)	P OK O	4-8 8-12 12-20 20+	
2)	P OK O	4-8 8-12 12-20 20+	
3)	P OK O	4-8 8-12 12-20 20+	
4)	P OK O	4-8 8-12 12-20 20+	
5)	P OK O	4-8 8-12 12-20 20+	
6)	P OK O	4-8 8-12 12-20 20+	
7)	P OK O	4-8 8-12 12-20 20+	
8)	P OK O	4-8 8-12 12-20 20+	